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REVIEWS AND NOTES

DIE TIERISCHEN PARASITEN DES MENSCHEN

1. Teil: Naturgeschichte der tierischen Parasiten des Menschen von Dr. Max Braun. Fünfte, vermehrte und verbesserte Auflage. 560 pp. 407 text figures. Curt Kabitzsch Verlag in Würzburg. 1915. 13 mk.; geb. 15.50 mk.

The appearance of a new edition of the well-known and highly prized text by Braun is deserving of more than ordinary notice here. It is seven years since the fourth edition was published and the literature on parasitology which, especially among Protozoa, has modified and extended the world's knowledge of this important field, may fairly be said to have doubled in that short interval of time. The last (fourth) edition of Braun's work saw the addition of a clinical-therapeutic section which in this edition has been expanded to a second part, the separate appearance of which is promised at an early date. Unquestionably it was the rapid growth in materials demanding consideration which has led to the separation of the newly introduced section as an independent item; for the first part, which covers only the structure, life history, distribution and classification of the species parasitic in man, now utilizes 560 pages—or more than twice the compass of the entire work in the third edition.

The increase in size is also accompanied by marked changes in form such as to allow of more extended discussion in the same space. The type page is both larger and wider. More of the present volume has been thrown into fine type and other means of condensation have been employed freely in the effort to bring present knowledge into a reasonable compass. Unfortunately in this process the author was compelled to reduce the introduction considerably in extent, a change which every one must view with real regret for Professor Braun is an artist in presenting concisely and clearly any discussion of general principles and many generations of students have read with profit and delight his opening chapter on Parasitism in General. The general discussions with which the account of each group was introduced have also suffered somewhat in the process of condensation.

Even with all this trimming the text has grown fully twenty per cent. in volume. New material is in evidence everywhere. The new edition is in fact a real revision and not a mere reprinting with minor textual modifications. The author has added a very considerable number of new species which have been discovered since the appearance of the last edition or which since then have been found to be of significance to man. This increase runs from ten to thirty per cent. in different groups.

The plan adopted in the previous edition of grouping the important references to the literature in a section at the close of the text proper has been followed here more consistently. This list, though sharply scanned, has increased greatly in extent and now covers 110 text pages. It is notably fairer than most foreign lists in its treatment of American work and is thoroughly up to date. A few typographical errors were noted and some curious abbreviations in titles of English articles. Unfortunately the references on topics in the last 25 pages are printed in the text after the manner of earlier editions and not brought together in the bibliographic list. This detracts somewhat from the character of the work and the record is also not so good. Yet, one may say confidently that it is the best reference list available in this field.

The illustrations are frequent, good, and about one fourth of them new. Some ancient favorites that are not very accurate still occupy their historic places. Thus the figures of Demodex and of the female *Ixodes ricinus* are little worthy of a place in such a work. But on the whole the work is better and more profusely illustrated than our own texts in biological science.

The section on Protozoa has perhaps been modified most of all. The system is greatly expanded and one notes that the Cnidosporidia have been exalted to the rank of a class, a conspicuous departure from the time honored division of this phylum into four classes. By the removal of the discussions concerning insect vectors (mosquitoes, biting flies, etc.) to the chapter on insects the apparent increase in size is not marked superficially, but the space gained in this way is more than filled by data on the group proper. New species, new data on morphology, life history, and biology, as well as recent experimental work, and new figures are prominent in this section.

In the chapter on Trematodes the author has introduced a systematic outline prepared by Odhner and embodying the recent important researches of that distinguished investigator on the relationships of the various groups of flukes. This system marks a distinct advance in the direction of a natural classification based on comparative anatomy and follows the line of attack formulated in Looss' epochal studies on the natural classification of the Trematodes. It is interesting to note that even in this long known and much studied group, the text lists seven species out of twenty-one that were not mentioned in the previous edition, and that the accounts of species formerly listed almost all have been radically revised in correspondence with recent discoveries concerning them. The author displays commendable conservatism in refusing to follow extreme modifications in nomenclature and yet he has not hesitated here or elsewhere in the volume to use new names when their establishment rests upon adequate study and morphological demonstration.

Among the Cestodes which furnish the fewest species to the list of human entozoa there are less changes to record. The older species have undergone little alteration though one name, *Hymenolepis lanceolata,* has been eliminated on the basis of error as indicated by Fuhrmann in 1908 in a note generally overlooked. But it will surprise even those somewhat familiar with the literature to find that among the twenty-seven species of tapeworms listed in this work seven are new within the last seven years.

No group of helminthes has undergone greater changes in recent years and is still in greater need of revision on the basis of such studies as Looss, Lühe, and Odhner have made among Trematodes, than the Nematodes. Thanks especially to Goldschmidt, our knowledge of nematode structure has been greatly advanced and full use is made of this advance in the work under review. The system is still a disconnected series of "families," based on factors very dissimilar in character and value, representing thus sometimes a small group of closely related species and in other cases a large mass of anatomically variant forms drawn together by artificial definitions. Some slight progress has been made in the solution of the difficulties by the pioneer work of Railliet and Henry which has been used by Braun. Nevertheless the "system" remains little more than a list. Under individual species Braun has added much new and important material, such as the work of Fülleborn on filarial life history, of Looss on the hookworms and other species, and of many others. A good many new species and also some new names greet the reader in this section. Fortunately figures and descriptions are now adequate in the main for an understanding of the species and for their differentiation; this which has not been true in earlier works, will do much to clear up the confusion which exists in this group.

Among the Arthropoda (mostly ectoparasitic mites and insects) one notes a fuller treatment which conforms to the now fully demonstrated rôle of these forms in the transmission of protozoal diseases. The increase is due partly, as already noted, to the transfer of such materials as in earlier editions were found under other headings. This change has made distinctly for the unity and clarity of the work and was necessitated further by the demonstrated agency of the single form in the transmission of various parasitic organisms, e. g., the mosquito as the inoculator of several protozoa and filariae. But beyond this the arthropod section contains much new material. Especial mention should be made of the fine new figures and the carefully collated data for differential diagnosis of important species. Of course the accumulated knowledge in this part of the field is great, as exemplified by recent works devoted exclusively to it, and Braun has not attempted to include all. But as a summary this part must be recognized as a real success and a great advance over the distinctly inadequate treatment accorded this phase of the subject in earlier editions.

All in all the new edition represents a most valuable contribution to helminthological literature. It is a worthy production of the famous head of the Königsberg school of parasitologists and justly entitles him again to the congratulations and thanks of other workers in this field.

Doctor Jesus Rafael Risquez of Caracas has published an interesting study of nineteen cases of the blood fluke (*Schistosoma mansoni*) observed in eighty-six autopsies in Venezuela, fourteen of which came from the white race, none from the indian or negro, and five from half breeds; in large part the patients were born in Caracas.

The Report of the United Fruit Company's Medical Department for 1914 was reviewed in this Journal last December. The Report for 1915 confirms in essential details the conditions regarding the occurrence of human parasites on the shores of the Caribbean which were taken from the previous report and embodied in the tables of the review cited.

HIBERNATION OF MUSCA DOMESTICA

In 1913 Dr. Henry Skinner challenged the commonly accepted belief that adult house flies remained dormant throughout the Winter months. He even went so far as to say tentatively that house flies passed the Winter in the pupal stage and in no other way. Dr. Johannsen's observations at Ithaca tended to confirm Dr. Skinner's conclusion insofar as it applied to conditions in the latitude of New York State.

In January of this year an instructor in the Department, Mr. W. L. Chandler, observed several adult specimens of *Musca domestica* in the sub-basement of Roberts Hall, one of our University buildings. I have observed others in the sub-basement and around in the buildings even at this late date (April 7). These were remote from breeding places and there seems no possibility that they hibernated in the pupal stage.

WILLIAM A. RILEY

In a recent important paper Crawley has shown that when mice are fed material containing the so-called spores of *Sarcocystis muris* invasion of intestinal epithelial cells by the parasites takes place within two hours. This phenomenon is most favorably studied in the last inch or two of the small intestine. Within the cells, the parasites rapidly separate into two categories, the latter history of which shows them to be males and females.

In the male, development takes the form of a notable increase in the size of the nucleus, correlated with a loss of most if not all of the cytoplasm. Various internal changes take place within this enlarged nucleus, and eventually the chromatin becomes divided into clusters of minute granules, grouped around the periphery. These granular clusters solidify into compact balls, which elongate and produce the microgametes.